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'School' Versus 'Home': California-based Korean Americans' Context-dependent Production of /u/ and /oU/

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Abstract

Native simultaneous bilingual speakers of English and Korean who grew up in California were recorded speaking English in a sociolinguistic interview. Their speech was analyzed for evidence of back vowel fronting, which is a part of the set of vowel shifts known as the California Vowel Shift. Results show that the speakers did participate in the fronting of GOAT and GOOSE, with male speakers fronting more than female speakers. A speaker's generational status as a childhood immigrant (1.5 generation) or a native-born second generation Korean American did not affect fronting, but a speaker's self-identification as ethnically "Korean" versus "Korean American" did. A brief discourse analysis of two speakers demonstrated within-speaker variation, whereby discourse topics that related to a speaker's distance from Korean community and identity were correlated with more back vowel fronting, while topics that related to a speaker's affinity to and use of the Korean language were correlated with less back vowel fronting.

‘School’ versus ‘Home’: California-based Korean Americans’ Context-dependent Production of /u/ and /oʊ/

Andrew Cheng*

1 Introduction

This study addresses the social and linguistic ramifications of language contact in individual bilingual speakers. Specifically, it examines the extent to which sociocultural identity and other cultural contextual factors affect native bilingual speakers of English and Korean with respect to one of the sound changes implicated in the California Vowel Shift. The fronting of the English back vowels /u/ and /oʊ/ is a change in progress noted throughout the region, but some linguistic and sociolinguistic characteristics of a speaker and their speech may neutralize the extent to which fronting occurs.

1.1 Korean Americans and language maintenance

Immigration from South Korea to the United States has been steady ever since the armistice of the Korean War in 1953, and it increased dramatically following the passage of the Immigration and Nationality Act of 1965 that abolished country quotas. There are now approximately 1.8 million people of Korean descent residing in the United States, of which over a quarter (or half a million people) reside in the state of California. Even with the continuous influx of Korean-speaking immigrants and the development of strong co-ethnic communities such as Los Angeles’ Koreatown, the Korean language does not always fare so well in the “second generation”. Many second generation Korean Americans have difficulty maintaining proficiency in Korean, despite the best efforts of their families and communities (Kim, 2001; Au and Oh, 2009).

In this study, I define “first generation” as an adult (18 years of age or older) immigrant who is immersed in an English-language environment for the first time when they arrive in the United States. “Second generation” constitutes the direct descendants of the first generation, mostly born and raised in the United States, but sometimes born in South Korea and raised in the United States from the age of two (i.e., before the onset of speech, according to the individual). Falling in between these two categories is a third: “1.5 generation”, which is used by the Korean American community to refer to child and adolescent immigrants (Park, 1999). These Korean Americans develop full (if not adult-like) Korean proficiency prior to moving to an English-only environment, but may experience some to substantial L1 attrition after living in the United States.

The 1.5 generation and second generation Korean Americans in this study spoke Korean as their L1 or home language and English as their L2, and all of them reported equal or greater comfort and proficiency in using English compared to Korean. This is a common pattern for all immigrant languages spoken in the United States, not just Korean. The “two-generational model of anglicization”, adapted from Lee (2002), predicts that within just two generations, an immigrant language will be replaced entirely with English. The driving force is the social power and prestige of English as a superstratum language, which diminishes the perceived usefulness of Korean as a substratum language.

And yet, these speakers do generally want to maintain some proficiency in Korean, and studies show that their “heritage language” experience affects subsequent language acquisition. Au et al. (2002) demonstrated that childhood overhearers of a heritage language, who did not necessarily maintain conversational speaking fluency as adults, retained phonological knowledge of the language that improved accent ratings. There is indeed a large body of literature that tracks the phonological effects of a heritage language (or attrited first language) on the production and perception of a dominant language in simultaneous bilingual speakers (see Kang and Guion 2006; Polinsky

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and Kagan 2007; Chang 2016, among others). The bilingual speaker, as an individual, is an environment of language contact, in which Korean and English influence one another both on the level of phonetics and phonology (Flege, 2007), as well as on the level of social awareness and indexicality.

1.2 Sound change in California English

The Korean-English bilingual speakers of this study all resided in California at the time of recording. A series of vowel shifts that have been collectively referred to as the California Vowel Shift (Hinton et al., 1987) has been identified in many young speakers of California English, indicating a recent or ongoing sound change. The most developed and thus most widely studied shifts include the fronting of back vowels /u, oʊ, ʊ/ (GOOSE, GOAT, FOOT), the lowering of front lax vowels /ɪ,ɛ/ (KIT, DRESS), the backing of /æ/ (TRAP) and raising of pre-nasal /æ/ (HAND), and the COT-CAUGHT merger (Kennedy and Grama, 2012).

Although most studies of the California Vowel Shift focus on young White speakers, the shift has also been identified in native speakers of English who are of Asian descent. This includes Chinese Americans (Hall-Lew, 2009) and Japanese Americans (Mendoza-Denton and Iwai, 1993). In fact, Hall-Lew (2009) showed that some Chinese Americans in San Francisco were more advanced in the change compared to their same-age White counterparts, specifically for GOAT, thus demonstrating that the vowel shifts that originate in older generations of White speakers can be fully adopted by both younger White and Asian American speakers.

In addition to ethnicity, many other social factors such as class, gender, urban identity, persona, and social network have been shown to affect the amount of California Vowel Shift that is observed in a Californian's speech (Fought, 1999; Eckert, 2008; Podesva, 2011; Podesva et al., 2015). However, despite Californian-born Korean Americans' long-term presence in the state, no studies examine the variation in their speech patterns with respect to the California Vowel Shift.

The current study seeks to answer the following questions: first, do Korean California English speakers participate in the California Vowel Shift, in particular the fronting of back vowels /u/ and /oʊ/? Second, does the average young Korean Californian bilingual speaker uniformly demonstrate participation in the California Vowel Shift? In addition to static social factors such as gender and generational status, and linguistic factors such as phonological environment, do any other sociolinguistic patterns emerge from the data, including unexplored individual differences or variation within a single speaker?

2 Methods

To investigate these questions, twenty bilingual sociolinguistic interviews were conducted with second- and 1.5-generation Korean Americans. Thirteen of the interviewees identified as female (seven male); twelve identified as second generation (eight 1.5). Each interview lasted about one hour and included a semi-structured interview in Korean about the interviewee's personal and family background, a Korean-language reading portion (recorded for a companion study), and a second semi-structured interview in English about the interviewee's linguistic background and thoughts on Korean and American culture and identity.

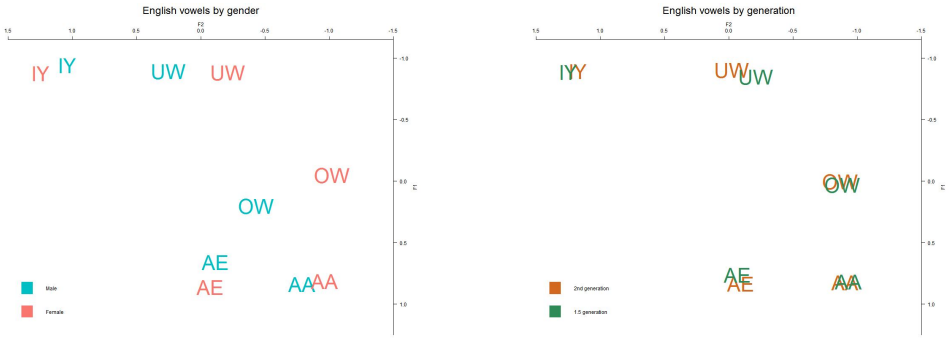
Each interview was conducted in a sound-attenuated "living room laboratory" designed to maximize interviewee comfort and natural speech. The interviewers were a team of four trained bilingual Korean-English speakers who were given the prompts to follow for each section of the interview. The speech of both interlocutors was digitally recorded and transcribed in Praat (Boersma and Weenink, 2016) and force-aligned using the Penn Forced Aligner (Yuan and Liberman, 2008). Then, measurements for fundamental frequency and formant values were extracted from all vowel utterances using the IFC formant tracker (Watanabe, 2001) and normalized using individual z-score normalization.

Following Podesva et al. (2015), the degree of back vowel fronting was determined by calculating a "fronting score" for each token of GOAT and GOOSE. Each speaker's average normalized F2 value for /i/ (FLEECE) was used as an anchor vowel. The normalized F2 of each back vowel token

was subtracted from the anchor vowel to determine its distance along that axis from the "front" of a speaker's acoustic space. Thus, lower fronting scores indicate more fronting, since the acoustic distance between /i/ and the back vowel is smaller.

3 Results

First, the general shapes of the speakers' acoustic vowel spaces are reported in Figures 1a and 1b, according to the speaker's gender and their generational status.



(a) Blue = male, red = female.

(b) Second generation = orange, 1.5 generation = green.

Figure 1: Acoustic vowel space of all speakers, averaged and split by gender (a) and generation (b). "UW" = /u/ (GOOSE); "OW" = /oʊ̯/ (GOAT).

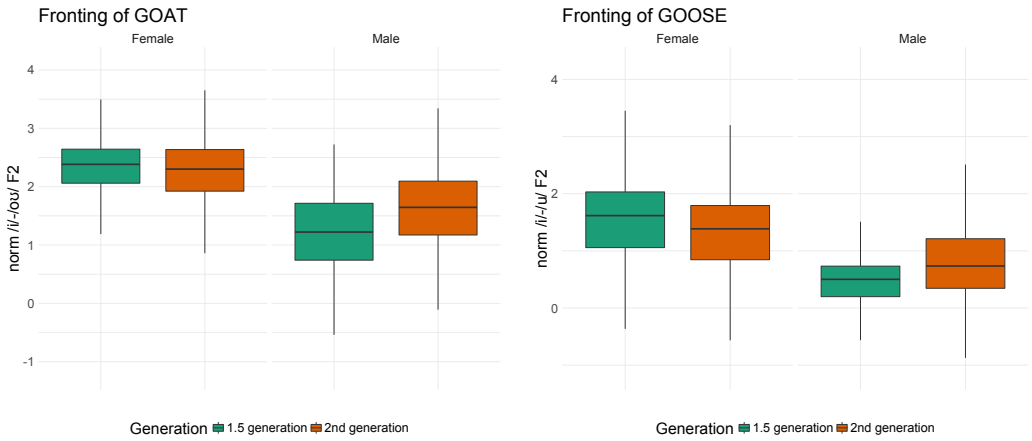
The vowel space for female speakers appears to be larger in general than the male vowel space. This accords with past research on gender differences in acoustic vowel spaces (Simpson, 2009). Compared to the female speakers, the male speakers had much more fronted GOOSE and GOAT vowels, while FLEECE and the low vowels were more similar. Overall, it appears that female speakers' GOAT is at the same normalized F2 value as /a/ (THOUGHT; "AA" in Figure 1a), which indicates a lack of fronting. When analyzed by generational status (1.5 or second), there were no significant differences between groups in the general vowel space shape. It appears that GOOSE is nearly as far front in acoustic space as TRAP, but GOAT is, again, as far back as THOUGHT. An impressionistic analysis indicates that GOOSE is robustly fronted in all of the speakers, but GOAT-fronting has lots of variation, with some groups fronting and other groups not fronting.

3.1 Fronting scores by gender and generation

Next, the speakers' fronting scores for the back vowels goat and GOOSE are reported in Figures 2a and 2b. This demonstrates the extent of the gender difference for back vowel fronting. An analysis of variance (ANOVA) model was built on fronting score for each vowel separately, with gender and generational status as fixed effects and speaker as a random effect.

The model found a significant effect of gender on the fronting score for GOAT ($F(1,17)=99.884$, $p<0.001$), but no effect of generational status ($F(1,17)=1.766$), $p=0.201$). Similarly, it found a significant effect of gender on the fronting score for GOOSE ($F(1,17)=17.606$, $p<0.001$), as well as a small effect of generational status ($F(1,17)=4.598$, $p=0.047$): second generation speakers had lower fronting scores, indicating more GOOSE-fronting. There was a minimal, non-significant interaction effect between generation and gender for the fronting of both vowels.

The interim conclusion is that the position of each back vowel with respect to the anchor vowel /i/ does depend highly on speaker gender: male speakers as a whole have more fronted back vowels, or smaller vowel spaces in general, than female speakers. As for generation, 1.5 and second generation speakers did not significantly differ for GOAT, but they did for GOOSE.



(a) Fronting scores for GOAT

(b) Fronting scores for GOOSE

Figure 2: 1.5 generation speakers (in green) did not differ significantly from second generation speakers (orange), but male speakers always had lower fronting scores – indicating more fronting – than female speakers.

In addition to these aggregate results, there were many cases of individual differences in amount of fronting, which can be seen both in comparing speakers who share the same gender and generational status, as well as looking within the variation of a single speaker.

3.2 Fronting scores by ethnic identity

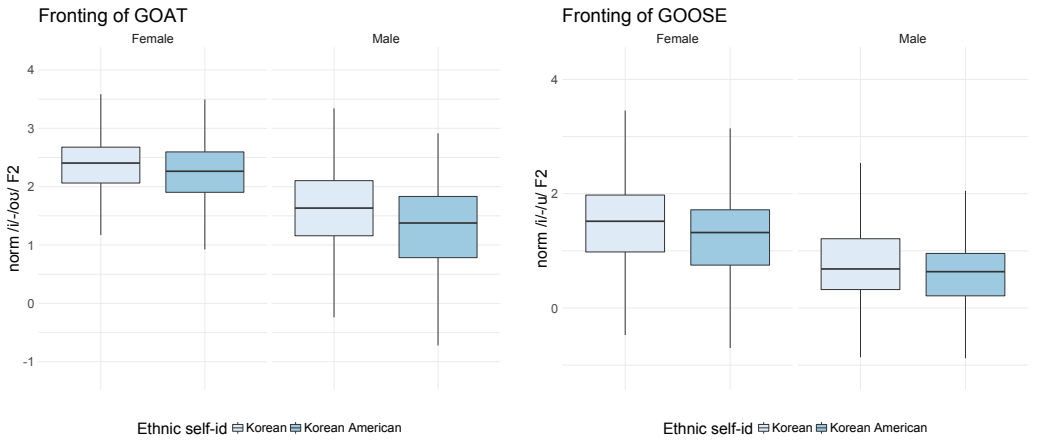
Based on one of the interview questions, which was "How do you identify ethnically?", each speaker was categorized as identifying as either "Korean" or "Korean American". The difference between these is subtle, and the answer's interpretation depends heavily on the context of the conversation. During interviews, those who responded with "Korean American" as their ethnicity tended to qualify not just that they identified as American, but that they wanted to distinguish themselves from being "Korean Korean", or of the same group as Korean nationals and first generation Korean American immigrants. However, those who responded with "Korean" did not necessarily deny or downplay their American identity. It is assumed here that interviewees who identified as "Korean American" have in their lives a particular reason for emphasizing their American identity (though see Lee (2002) for a discussion of bicultural identity and heritage language use), and hypothesized that these individuals will participate more in English back vowel fronting.

Two linear mixed effects models were run on these data, one that contained gender and ethnic self-identification as fixed effects and one that only contained gender. The model that used gender and ethnic self-identification was found to fit the data for GOAT better according to an ANOVA test ($\chi^2(1)=7.8605$, p=0.005), indicating that a speaker's ethnic identity did affect the amount of fronting for GOAT (but not for GOOSE ($\chi^2(1)=0.9864$, p=0.338)). Identification as Korean American as well as gender was a better predictor than gender alone in degree of fronting for GOAT. This is illustrated in Figures 3a and 3b.

Thus, even among the pool of male speakers, for example, the amount of fronting of a back vowel was not uniform, but depended on how they identified ethnically. Figure 4 shows all subjects individually, revealing the subjects who identified as Korean American who tended to have lower scores than their counterparts who identified as Korean.

3.3 Within-speaker variation

Because the production of a single vowel varies widely even when uttered by the same speaker, it is of interest to examine how a speaker's productions may change in different contexts. An analysis of



(a) Fronting scores for GOAT

(b) Fronting scores for GOOSE

Figure 3: Speakers who identified as Korean American (in blue) had a lower fronting score (indicating more fronting) than speakers who identified as Korean (in light blue).

the trajectory of a vowel's formant measurements over the duration of the interview can reveal the effects of phonological context and indexical discursive and pragmatic context on the manifestation of a particular vowel token. For this analysis, all tokens of a particular vowel that fell outside one standard deviation of the speaker's mean were extracted from the interview. The word and immediate discursive context of the token were then examined, and a selection of these analyses is presented here. In each of Figures 5, 6, and 7, the tokens and words in question can be found as labels on the figure either above or below the red box that represents one standard deviation away from the vowel's mean F2 value per speaker, and will also be referred to by approximate time in seconds (on the x-axis) of the interview. Hertz values in these figures are not normalized, as each speaker is plotted and analyzed individually.

In terms of phonological context, the segments immediately adjacent to a back vowel token can affect its F2 value. The articulation of a syllable-final /l/, for example, tends to be velarized, with a dorsal gesture that may lower the F2 value of the vowel that precedes it (Gick et al., 2002). In Figure 5, this can be seen in the lower-than-average F2 values for many of the tokens of "school" uttered by subject 19, a twenty-year-old speaker who identifies as male, Korean, and second generation. But one instance of /u/, utterred at around 1350 seconds, has a very high F2, despite having the same pre-lateral phonological context in the same word "school". David[1] says:

> DAVID: Um, well I actually didn't go to *school* in Chino Hills; I went to kind of like a nearby city called Walnut. [...] I actually don't have that many Korean friends... and if I did have Korean friends, they [...] probably spoke, like, more English than Korean.

The semantic context of this unique token of /u/ occurs in the interview just as the subject is beginning to discuss how he did not associate with other Korean American students at his high school, and only grew up knowing Korean Americans who, like him, spoke much more English than Korean, instead of Korean Americans who used Korean regularly every day. It is relevant to note that David was born in New Jersey and then moved at about age one to a city in San Bernardino County, bordering Los Angeles but with a much lower Asian American population, where he spent his childhood and adolescence.

David, who responded "Korean" to the ethnic identity question, has fairly low fronting scores

[1] Pseudonyms are used.

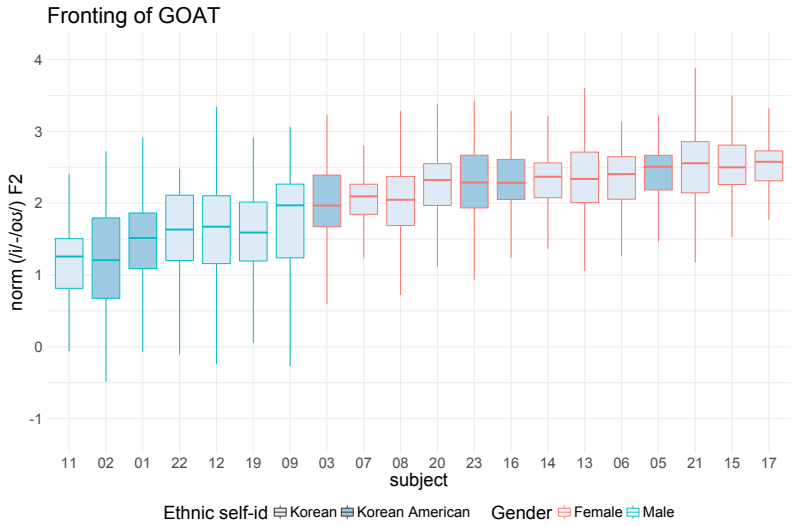


Figure 4: Fronting scores for GOAT, arranged by subject to demonstrate individual differences. Subject gender is indicated by box outlines (blue=male, red=female), and ethnic self-identification is indicated by box color (blue=Korean American, light blue=Korean).

(indicating more fronting). But he fronts less than the two male speakers in the study who responded "Korean American" (Figure 4). In this particular point during the discourse, as he begins to discuss his Korean identity—or rather, his distance from it—not only does a single token of /u/ in an F2-lowering context arise with a pattern-breaking high F2, the local F2 of all vowels also begins a rise, as indicated by the blue line in Figure 5, beginning at about 1350 seconds.

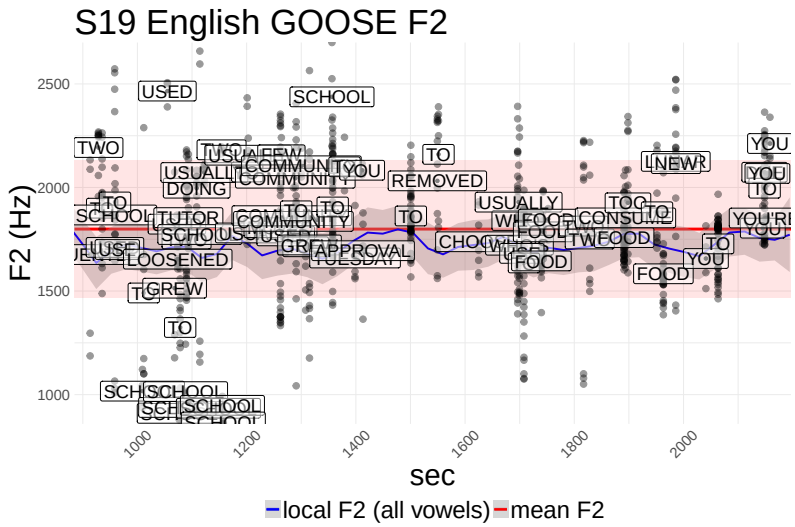


Figure 5: Trajectory of /u/ (GOOSE) during the interview for subject 19, a 20-year-old second-generation male who identifies as Korean. The blue line tracks local F2 for all vowels, and the red line indicates the speaker's static mean F2, with one standard deviation above and below in shaded red. Each label represents a word containing the vowel token in question, and the points represent measurements taken from the IFC formant tracker.

Another subject of interest in terms of within-speaker variation is subject 5, a twenty-year-old

speaker who identifies as female, Korean American, and 1.5 generation. In general, Astrid[2] has fairly high fronting scores for both back vowels among other female speakers, and especially among speakers who identify as Korean American. As a 1.5 generation Korean American, she immigrated to the United States at the age of three from the Seoul metropolitan area, but has otherwise lived in Koreatown and urban greater Los Angeles for her entire childhood and adolescence.

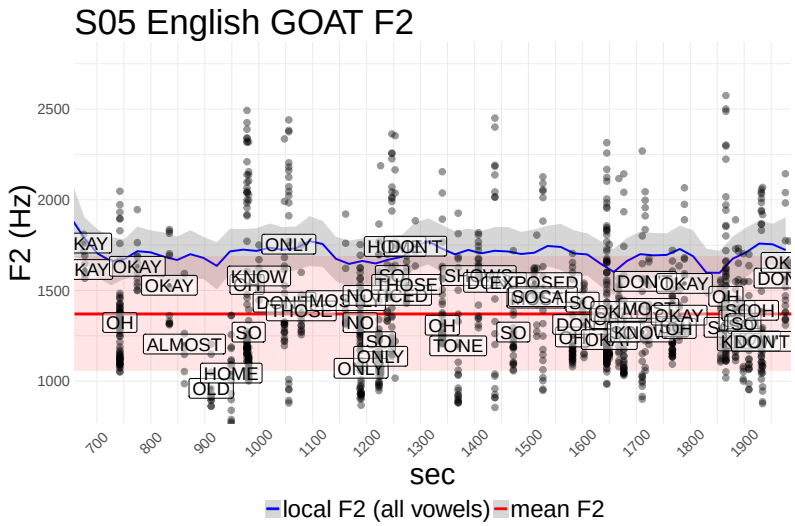


Figure 6: Trajectory of /oʊ/ (GOAT) F2 during the interview for subject 5, a 20-year-old 1.5-generation female who identifies as Korean American.

As can be seen in Figure 6, there is relatively little variation in the F2 values for /oʊ/ in Astrid's speech. The pre-lateral phonological context explains the low values for words such as "old". Of interest, however, is an instance when she utters the word "home" at about 950 seconds. She says:

> INTERVIEWER: Most of your Korean use and input is just at home, you would say?
> ASTRID: At *home* and at church.

This token of /oʊ/ has one of the lowest F2 values in her entire interview, and it has no adjacent consonants that might have triggered backing. But in the semantic context, the speaker is literally discussing her use of the Korean language, which does not have any back vowel fronting, and a very Korean-esque vowel arises. On the other hand, among her tokens of /oʊ/ that are beyond one standard deviation above the mean, we have "okay", "only", "don't", and another instance of "home" at about 1250 seconds. During this portion of the interview, Astrid discusses how she felt when she last visited South Korea and found that she struggled with using the Korean language after having grown up English-dominant in the United States.

> ASTRID: Not only the language barrier, definitely, but I definitely felt like an outsider [...] and it wasn't super comfortable using Korean. But, um, I noticed that because I had to use it, like, I would just, like [...] It would be more like I stopped using English there. I was more comfortable using Korean in Korea than back at *home*, I guess. Like back here.

[2]Pseudonyms are used.

INTERVIEWER: Would you say that when you speak Korean, do you think that people can tell that you grew up here?
ASTRID: Yeah, definitely.

Lastly, Astrid also discusses her use of the Korean language in relation to her parents and her future children later on in the interview, around 1600 seconds. In Figure 7, the blue line that represents local F2 for all vowels takes a dip at around that time, indicating lower F2 values (and less fronting). She says:

ASTRID: Oh, my parents never say that I need *to improve* [my Korean], but um, there are times when either of us are, um, uncomfortable or awkward, or like, at a loss for words.

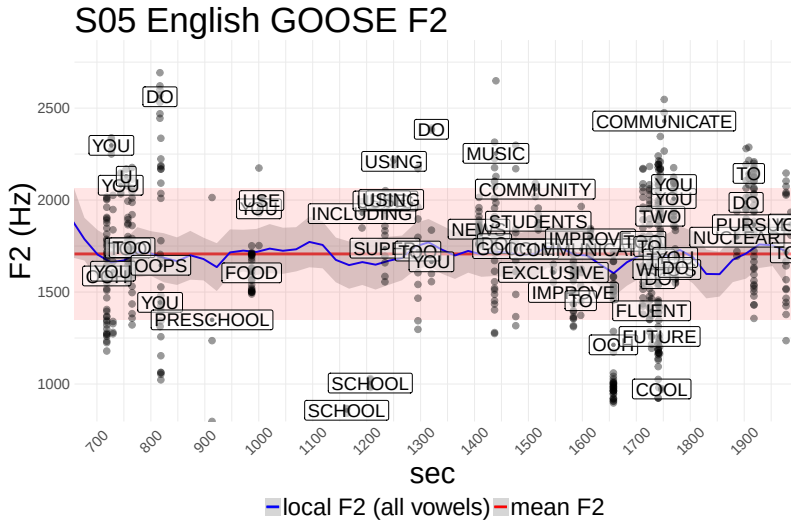


Figure 7: Trajectory of /u/ (GOOSE) F2 during the interview for subject 5, a 20-year-old 1.5-generation female who identifies as Korean American.

These two instances of /u/ are lower than average, even without the pre-lateral phonological context of other words like "school" and "cool". As she continues to discuss improving her Korean "fluency", and passing the Korean language onto her children in the "future", these words also have markedly low F2 values for /u/.

Overall, it is clear that within-speaker variation exists in the back vowel fronting phenomenon. Furthermore, it appears that some amount of fronting (or lack thereof) is correlated with the semantic content of the speaker's discourse and its connection to the speaker's identity as a Korean American or a person of Korean descent with ties to the Korean language.

4 Discussion and Conclusion

The Korean Californians in this study do demonstrate fronting of the vowels /oʊ/ (GOAT) and /u/ (GOOSE) when speaking English, with GOOSE especially so. These two vowel shifts are a part of the California Vowel Shift. Thus, the study presents more evidence that ethnic minority members of a language community do participate in the changes in progress that are usually associated with the majority (White) speaker group.

However, the study also finds that participation in back vowel fronting is not uniform. Male speakers tended to have more fronted GOAT and GOOSE, possibly related to smaller vowel spaces overall, whereas some female speakers exhibited no fronting of GOAT whatsoever. There was no significant difference found between speakers who were second generation or 1.5 generation. However, a speaker's identification as Korean American correlated with fronting of GOAT.

The other factor that seemed to affect vowel fronting was the semantic and pragmatic content of the discourse. When one speaker discussed his distance from Korean culture and identity, his back vowels tended to become more fronted. When another speaker discussed her use of the Korean language and future plans to improve her fluency, her vowels tended to become less fronted. Although this analysis is limited in its scope, it provides some evidence in favor of topic-based style-shifting in speech that relates the elements of the California Vowel Shift to their indexical value as markers of social and ethnic identity.

What this study does not address is to what extent the effects of social identity affect the phonological systems of these bilingual speakers, and whether bilingualism actually plays a role. To that extent, a future study would have to include monolingual speakers, such as second generation Korean Americans who never learned how to speak Korean but still feel a strong sense of Korean identity.

If indeed monolingual English-speaking Korean Americans showed evidence of back vowel fronting that is in some cases attenuated by social factors and topic-based style shifting, it could point toward the development of a specifically Korean American way of speaking, or an ethnolect. This is one way in which a substrate language affects the socially dominant language. Although the current study only examines bilingual speakers who are undergoing the two-step process of anglicization, it is clear that the English that they have acquired is rich source of variation that is ripe for further study.

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